Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An intake air amount variation detector for detecting intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

injection amount control means for changing a fuel injection amount from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount is changed by the injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the computation means as an index value that indicates the degree of intake air amount variations among the cylinders;

comparison means for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control means changes the fuel injection amount from the injection amount for stoichiometric operation;

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

conversion means for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control means periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation means extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

2. (Previously Presented) The intake air amount variation detector according to claim 1, wherein:

the comparison means compares the predetermined reference value with the amount of a change that occurs when the injection amount control means increases the fuel injection amount from the injection amount for stoichiometric operation, and

the judgment means, when the amount of the change is greater than the reference value, judges that a permissible level is exceeded by the intake air amount variations among the cylinders.

3. (Previously Presented) The intake air amount variation detector according to claim 1, wherein:

the comparison means compares the predetermined reference value with the amount of a change that occurs when the injection amount control means decreases the fuel injection amount from the injection amount for stoichiometric operation, and

the judgment means, when the amount of the change is smaller than the reference value, judges that a permissible level is exceeded by the intake air amount variations among the cylinders.

4. (Canceled)

5. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

injection amount control means for changing a fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the computation means as an index value that indicates the degree of intake air amount variation in the particular cylinder;

comparison means for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control means changes the fuel injection amount from the injection amount for stoichiometric operation;

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

conversion means for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control means periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation means extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

6. (Previously Presented) The intake air amount variation detector according to claim 5, wherein:

the comparison means compares the predetermined reference value with the amount of a change that occurs when the injection amount control means increases the fuel injection amount for the particular cylinder from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is greater than the reference value, judges that a permissible level is exceeded by an undue increase in the intake air amount in the particular cylinder.

7. (Previously Presented) The intake air amount variation detector according to claim 5, wherein:

the comparison means compares the predetermined reference value with the amount of a change that occurs when the injection amount control means decreases the fuel injection amount for the particular cylinder from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is smaller than the reference value, judges that a permissible level is exceeded by an undue decrease in the intake air amount in the particular cylinder.

8. (Canceled)

9. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion

engine, the device comprising:

injection amount control means for changing a fuel injection amount from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

computation means for determining, on an individual cylinder basis, the amount of a torque or rotation speed change that occurs when the fuel injection amount is changed by the injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the computation means as an index value that indicates the degree of intake air amount variation in an individual cylinder;

comparison means for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control means changes the fuel injection amount from the injection amount for stoichiometric operation;

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

conversion means for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control means periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation means extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed

change, and determines the amplitude of the extracted change component as the amount of the change.

10. (Previously Presented) The intake air amount variation detector according to claim 9, wherein:

the comparison means compares, on an individual cylinder basis, the predetermined reference value with the amount of the change that occurs when the injection amount control means increases the fuel injection amount from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is greater than the reference value, judges that a permissible level is exceeded by an undue increase in the intake air amount in an individual cylinder.

11. (Previously Presented) The intake air amount variation detector according to claim 9, wherein:

the comparison means compares, on an individual cylinder basis, the predetermined reference value with the amount of the change that occurs when the injection amount control means decreases the fuel injection amount from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is smaller than the reference value, judges that a permissible level is exceeded by an undue decrease in the intake air amount in an individual cylinder.

12. (Canceled)

13. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

first injection amount control means for changing the fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to an increased amount;

first computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the first injection amount control means;

second injection amount control means, which, when the torque or rotation speed change amount determined by the first computation means is not greater than a predetermined reference value, decreases the fuel injection amount for the particular cylinder from the injection amount for stoichiometric operation;

second computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the second injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the first computation means and the torque or rotation speed change amount determined by the second computation means as index values that indicate the degree of intake air amount variation in the particular cylinder;

comparison means for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control means changes the fuel injection amount from the injection amount for stoichiometric operation;

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

conversion means for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the first injection amount control means periodically increases or the second injection amount control means periodically decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the first computation means extracts a change component having the same frequency as a fuel injection amount increase frequency from a torque or rotation speed change or the second computation means extracts a change component having the same frequency as a fuel injection amount decrease frequency from the torque or rotation speed change, and determines the amount of the extracted change component as the amount of the change.

14. (Canceled)

15. (Canceled)

16. (Currently Amended) An intake air amount variation detector for detecting intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

an injection amount control unit for changing a fuel injection amount from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

a computation unit for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount is changed by the injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the computation unit as an index value that indicates the degree of intake air amount variations among the cylinders;

a comparison unit for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control unit changes the fuel injection amount from the injection amount for stoichiometric operation;

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

a conversion unit for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control unit periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation unit extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

17. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

an injection amount control unit for changing a fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

a computation unit for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the computation unit as an index value that indicates the degree of intake air amount variation in the particular cylinder;

a comparison unit for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control unit changes the fuel injection amount from the injection amount for stoichiometric operation;

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

a conversion unit for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control unit periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation unit extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

18. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

an injection amount control unit for changing a fuel injection amount from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

a computation unit for determining, on an individual cylinder basis, the amount of a torque or rotation speed change that occurs when the fuel injection amount is changed by the injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the computation unit as an index value that indicates the degree of intake air amount variation in an individual cylinder;

a comparison means for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control unit changes the fuel injection amount from the injection amount for stoichiometric operation;

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

a conversion unit for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the injection amount control unit periodically increases or decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the computation unit extracts a change component having the same frequency as a fuel injection amount change frequency from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

19. (Currently Amended) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

a first injection amount control unit for changing the fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to an increased amount;

a first computation unit for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the first injection amount control unit;

a second injection amount control unit, which, when the torque or rotation speed change amount determined by the first computation unit is not greater than a predetermined reference value, decreases the fuel injection amount for the particular cylinder from the injection amount for stoichiometric operation;

a second computation unit for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular cylinder is changed by the second injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the first computation unit and the torque or rotation speed change amount determined by the second computation unit as index values that indicate the degree of intake air amount variation in the particular cylinder;

a comparison unit for comparing a predetermined reference value with the amount of a change that occurs when the injection amount control unit changes the fuel injection amount from the injection amount for stoichiometric operation;

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the air intake amount variations among the cylinders; and

a conversion unit for converting the intake air amount variations among the cylinders to intake valve operating angle variations among the cylinders and/or intake valve lift amount variations among the ~~cylinders.~~cylinders,

wherein the first injection amount control unit periodically increases or the second injection amount control unit periodically decreases the fuel injection amount from the injection amount for stoichiometric operation by a predetermined amount at a frequency outside the range of human perception; and

wherein the first computation unit extracts a change component having the same frequency as a fuel injection amount increase frequency from a torque or rotation speed change or the second computation unit extracts a change component having the same frequency as a fuel injection amount decrease frequency from the torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.